

WHAT IS CLAIMED IS:

- 1                   1.     A method for voice activity detection on an input signal using a log  
2     likelihood ratio (LLR), comprising the steps of:  
3                   determining and tracking instant, minimum and maximum power levels of the  
4     input signal;  
5                   selecting a first predefined range of signals of the input signal to be considered as  
6     noise signals;  
7                   selecting a second predefined range of signals of the input signal to be considered  
8     as voice signals;  
9                   using the voice signals, noise signals and power levels for calculating the LLR;  
10                  using the LLR for determining a threshold; and  
11                  using the threshold for differentiating between noise and voice in the input signal.
- 1                   2.     The method of claim 1, wherein the instant power level is determined by:  
2                   transforming the input signal into a frequency domain input signal;  
3                   determining a sum of signal power of a preselected frequency range of the  
4     frequency domain input signal; and  
5                   filtering the sum of signal power.
- 1                   3.     The method of claim 2, wherein the minimum power level is determined  
2     by filtering the instant power level to generate a first filtered signal such that the first filtered  
3     signal reacts quickly to a decrease in power and slowly to an increase in power.
- 1                   4.     The method of claim 3, wherein the maximum power level is determined  
2     by filtering the instant power level to generate a second filtered signal such that the second  
3     filtered signal reacts quickly to an increase in power and slowly to a decrease in power.
- 1                   5.     The method of claim 4, wherein the first predefined range of signals  
2     comprises all signals within a first power range above the minimum power level.

1                   6.       The method of claim 4, wherein the second predefined range of signals  
2 comprises all signals within a second power range below the maximum power level.

1                   7.       The method of claim 1, wherein the LLR includes a plurality of values,  
2 and wherein the threshold is determined by averaging the values of the LLR for the first  
3 predefined range of signals.

4                   8.       The method of claim 7, wherein the threshold is zero or below.

1                   9.       The method of claim 8, wherein the threshold is an average of the values  
2 of the LLR plus a predefined margin.

1                   10.      An apparatus including a communications device having a voice activity  
2 detection processor for controlling spectral efficient or power efficient voice transmissions  
3 relating to an input signal, said voice activity detection processor being configured to execute  
4 processing including:

5                   determining and tracking instant, minimum and maximum power levels of the  
6 input signal;

7                   selecting a first predefined range of signals of the input signal to be considered as  
8 noise signals;

9                   selecting a second predefined range of signals of the input signal to be considered  
10 as voice signals;

11                  using the voice signals, noise signals and power levels for calculating the LLR;

12                  using the LLR for determining a threshold; and

13                  using the threshold for differentiating between noise and voice in the input signal.